MOVIETONE BULLETIN

Published in the interest of the Movietone Projectionist by

FOX CASE CORPORATION

460 WEST 54TH ST., NEW YORK

VOLUME I, No. 35 SEPT. 1, 1928

Capacity and Overload

FROM several movietone projectionists has come complaint of theatre managers demanding increase in sound until the set was overloaded and distortion, oscillation and other troubles set up. This same thing was just recently laid before me by no less person than Harry Rubin, Supervisor of Projection for the great Publix Theatre chain, whereupon it was decided to devote space to it.

In the first place, the conditions of each installation are very carefully observed by competent engineers from the Western Electric and Fox Case organizations and a set is installed which has ample capacity for the theatre. It must however be clearly understood that by "ample capacity" it is meant that the set has ample capacity to provide all the sound that is necessary to secure the best possible effect if the panel setting be what the instructions call for. It is not meant, however, that the set will provide any great amount of sound over and above what will give the best effect, and right there lies the base of most trouble.

Some theatre managers, we are sorry to say, do not use the best of judgment in the matter of sound volume. They apparently argue that if some sound is good, an uproar is, perforce, better, hence they demand what amounts to an uproar of sound, and that of course may result in overloading the set.

A medium volume of sound is far preferable to too much. What may well be termed overloading the auditorium with sound is to be very carefully avoided. As we have many times told you, the fader should be carefully cued for each scene in each production. The sound volume should not, and for best general results **must not** exceed that which will enable those in the rear seats who have normal hearing to listen without discomfort. In making this distance test it is important that the one or those seated in the rear seats have hearing of normal acuteness. Those of dull hearing, it may reasonably be expected, will seat themselves nearer the screen.

It should never be that there is actual need for overloading a set, unless it be that changes are made in the auditorium itself which alter the sound volume necessity. Actual overloading should be made evident by unsteadiness of the amplifier plate current meters.

However it must be understood that an effect very similar to overloading, such as distortion of sound and oscillation, may be caused by a reverberant house—an auditorium which has too much hard surface exposed. This effect is made worse by increased volume.

An auditorium of this sort may be "cured" by covering a portion or all of its walls with cloth, such as may be had for the purpose in very lovely patterns. The cloth may be set in moulding panels, and may lay flat upon the wall surface.

Of course it is quite true that the size of the set must be such as will fit the auditorium, but since local conditions in the auditorium itself have a great deal to do with

(*Continued on last page, Col. 3*)

Fader at Zero

It not infrequently happens that there will be a considerable space between voice or other sound it is desirable to reproduce. This is especially true in the news reel.

In cueing the fader these sections should be marked zero, and the fader should be set at zero during their duration, since otherwise there may be more or less pronounced surface noise audible to the audience.

Another thing, in making the change-over, some movietone projectionists do not handle the fader as carefully as they should. The fader must be shifted, if possible, with one even-speed movement. If you find you cannot do this, then move it at even speed to zero, stop, move your hand and then repeat the process, but don't go too far and find yourself obliged to reduce the sound. Your cue sheet should show the correct setting. Reach that setting exactly and stop, except as before remarked, if the cueing was done with an empty auditorium, you may have to boost the reading a point or two.

Use Heavy Oil

Oil spattered film is terrible. It is utterly inexcusable. The effect is worse than bad. If your intermittent oil well bearings show inclination to seep oil out, use heavy oil. In fact, I'm inclined to believe that in such cases it won't be a bad stunt to try high grade vaseline. However, before doing that set the oil seepage matter before the projector manufacturer and ask his sanction to the use of vaseline, or such equivalent as he may recommend.

Eternal Vigilance

ETERNAL vigilance is the price of excellence in movietone projection as in other matters. Merely because equipment and its composite parts operate 100 per cent. efficiently today is no proof they will do the same thing tomorrow.

He who waits until a defect becomes apparent to him through fault in the thing the audience sees and hears is **not** a real movietone projectionist. He is not a first class motion picture projectionist at all. He is merely a wage earner, and a not-too-efficient wage earner at that!

If reading this makes you uncomfortable, or feel in any degree guilty, then you will do well to hold communion with yourself. Just retire into the depths of a theoretical closet and pray to **yourself**, asking that you snap out of it, cast off that the-easiest-way-is-the-best-way feeling and resolve a mighty resolve that from now on henceforth and forevermore you will come on the job to be on the job while you are on the job; that you won't be an as-nearly-as-possible working loafer.

For example: Don't carry on indefinitely on the "I guess it's all right" idea. Don't say to yourself: "Oh, I guess the horns are all right. They sound all right and it's a lotta bother to test them." Reverse that mental operation and say, "Maybe those horns are all right, but I want to **know** they are, so I'll test them separately to make sure." Don't thread in a movietone film without examining the sound gate and sound sprocket on the general idea that "it's prob'ly all right." "Probably" it is, but should the "probably" happen to be in reverse there may and "probably" will be a lot of sound band ruined before you discover that fact. Of course you're "sorry" and all that, but what in ——— (deleted) good does that do?

Had you done your plain duty and examined that sound gate carefully before threading, the film would not have been injured, and that's worth several thousand "I'm sorry's."

Remember always that you are a movietone projectionist. Be proud of the excellence of your work, and thus give movietone reason to be proud of you.

Epilogue: Don't "guess." Make periodic examinations and tests of any and everything in connection with your equipment which can possibly get out of order, or in a condition in which it will not function one hundred per cent. perfectly.

Play Fair

MOVIETONE projectionists should and we believe do make a real effort to play fair with theatre audiences.

What's that? Oh yes, it is quite possible for the projectionist to be unfair to them, and in so doing also to be unfair to movietone and to the theatre management itself.

In what way, do you ask?

The answer is simple. The theatre patron pays an admission on the assumption that what he or she is to see and hear will be placed before the audience in the best possible way—that it will, so far as is humanly possible, be placed before him or her, at 100 per cent. of its amusement and dramatic value. That, you will agree, is quite true, will you not?

You also will agree, I think, that by inattention or carelessness, or by failure to do everything possible to cause the apparatus under the charge of the projectionist to function at its maximum efficieny, the results as seen and heard by the audience will be impaired and very possibly greatly impaired, too.

Not much chance to dispute or even question that proposition, is there? And if we admit its truth is it not also true that by such failure the projectionist has lowered the value of what the audience has bought, and in so doing has been deliberately unfair to it? Moreover, is it not also true that he has in like measure been unfair to movietone and to the theatre in which he works, to say nothing of being, in the last analysis, very unfair to himself?

Movietone depends upon you to do the square thing. Audiences depend upon you to play fair. Your employers depend upon you to be on the square, and there is only one way to do that, namely to cause the apparatus to function in the very best possible manner, and thus place movietone before theatre audiences at maximum value in entertainment.

FLICKERS

Not long ago the first picture show in Podunkville was opened. The film exchanges had trouble right from the start. Every time film was shipped from Podunkville there was about a hundred feet missing. Investigation proved the janitor was swiping it and selling it to the natives to make celluloid collars out of.

Life is a puzzling proposition. If you depend upon pull to get you somewhere you are apt to be passed up. And if you depend upon push you may find yourself chauffering a wheelbarrow.

Remember the old town square? A lot of fellows back home are still doing the square thing—they are loafing on it all day long.

You can't always tell. Just because a man is using flowery language is no sign he is handing out bouquets.

If you want to flatter a woman tell her she is different from all the rest. You will be right, whoever she is.

If you can't get along with your wife move into a modern efficiency apartment. There isn't room there for argument.

Study movietone and you can project movietone. Even the taxidermist knows his stuff.

Good work is sometimes like an old flivver. It is hard to keep it going.

Keep your eyes open. All some people ever see of opportunity is the tail light.

Take things philosophically. It doesn't do much good to kick unless you are a chorus girl.

Land of Everglades Contributes Foursome Photo of Movietone Projectionists

Four movietone boys of Miami, Fla. Left to right: Mr. George Raywood, Mr. W. S. Roberts, Mr. E. A. Roberts, Mr. E. E. Frech. *Note the palm frond tickling Mr. Raywood on the head. And you can just feel the ocean breeze blowing through the foliage in the background. No wonder they are all smiling.*

As to Picture Size

MOVIETONE projectionists are invited to consider the importance of gauging the size of the picture to suit the auditorium conditions. In this item many things may be considered. I shall set them forth in order, or part of them at least, in this article. Later I shall perhaps deal with the matter more in detail.

First, it may be taken as a basic fact that a motion picture should be no larger than is necessary to cause the picture details to be clearly seen from the rear seats in the auditorium.

Size over and above these requirements automatically operates to reduce screen brilliancy per candle power issuing from the projection lens. It operates to make all photographic blemishes and faults more pronounced. It increases the size and visibility of all "rain" marks and similar blemishes. It sets up additional eye strain for those "down front." It causes any movement of the screen image as a whole, up, down or sidewise, to be more visible. It sets up a very largely increased light demand, hence current consumption demand if screen brilliancy is to be maintained equal with that of a smaller picture.

Such increase in size beyond the requirements above set forth accomplishes no gain in naturalness or in anything else. As a matter of fact men, women or other things will appear quite life size regardless of picture size, because the audience looks at the picture as a whole and judges the relative "size" of any object by surrounding objects.

From any and every viewpoint it is advantageous to have the picture no larger than will enable those in the rear seats to see all details clearly and without undue eye strain, with the proviso that extremes are seldom desirable in anything, and a ten-foot-wide picture is perhaps as small as should be used in a theatre.

THAT SIXTH SENSE

The other day we saw a projectionist hopping around the booth like a cat on a hot griddle. He had sensed something was a little wrong with the sound projection. That fellow has movietone consciousness.

Oiling and Over-Oiling

NO ONE thing works greater harm to film or greater injury to what audiences see upon the motion picture theatre screen than does over-oiling motion picture projector bearings. This same thing also is or may be responsible for much damage to movietone sound reproduction. Certainly no true movietone projectionist would be guilty of so gross and totally unnecessary an abuse, but unfortunately they cannot control oiling in projection rooms other than their own.

Over-oiling is usually due either to just plain carelessness or to lack of knowledge on the part of the projectionist committing the fault. I almost said committing the outrage. Had I done so would any say that I was over harsh? However, whether it be carelessness or lack of knowledge, the results are the same. The film receives a more or less thorough spattering of oil and each spot gradually spreads until a large portion of the film surface is covered. You all know the result, both to the picture and to sound.

Over-oiling is entirely unnecessary, in that it does no good in any degree commensurate with the damage set up. In fact it may well be questioned whether or no over-oiling does any appreciable good at all. Certainly it does plenty of harm.

What's that? What constitutes just the correct amount of oil for a motion pitcure bearing, do you ask?

A fair question. Unless I can answer, the energy used in writing this article up to this point has been wasted. First let us examine into just what constitutes lubrication. What office does lubrication fill?

As you all know, dry metals, ru. bing one against the other under pressure, wear. Friction is set up and tiny particles are torn from both surfaces. This same thing is true, in lesser degree, with wet metal surfaces. The problem then is to separate the surface of a spindle or shaft from the bearing in which it runs by means of a substance over which metals will slip with little if any friction, and that is exactly what the oil you pour into a bearing does.

We are told by scientists that, incredible as it may seem to you and me, oil which has proper "body" actually does separate a shaft and bearing so that the metal of one does not touch the metal of the other at all. What we then do in oiling a bearing is supply just sufficient oil to form such a film, which in practice means using a new bearing and shaft sufficient to fill the slight space between shaft and bearing. Of course if we put any more oil in than this space will contain it will, perforce, run out. That is just plain common sense, is it not?

All right! Now consider a new projector. Do you for one moment imagine that there is more than sufficient space between any shaft and bearing thereon to hold in excess of two drops of oil? Think that over, brother! If you decide that there is not, then it follows that if you put more in the oil hole, the surplus over two drops will just run through the bearing and out. And what will happen to it when it runs out? Very likely it will be thrown off the moving parts by centrifugal force, is it not? Pretty likely also that the film will be the goat, what?

We thus arrive at the conclusion that two drops is quite sufficient for any motion picture projector bearing that is not worn. But if it is worn, does that alter the requirement? It does **not**, because of the fact that there is still quite sufficient oil in two drops to form the protective film on the shaft and bearing, and that is all that is required.

I think we may safely set up the following rules with relation to projector oiling:

(a) Use only the oil recommended by the projector manufacturer.
(b) Give the smaller bearings carrying relatively slow speed shafts one drop of oil every two hours of actual running. Give the heavier bearings and the high speed bearings two drops of oil every two hours of actual running.
(c) Under no circumstances use light oils such as 3-In-One for motion picture projector bearings. Such oils doubtless have their proper uses, but projector lubrication is not among them. They have not sufficient body to lubricate projector bearings adequately and they are so thin that they will be readily thrown off moving parts.

Of course I know one and two drops every two hours of operation will seem terribly small to you chaps who have been accustomed to giving each bearing a literal bath of oil every once in a while, but I assure you the quantity I have suggested is ample and the time between oilings is quite all right. Your projectors will last just as long as they did before and the films—well, if they had voice, they certainly would arise and call you thrice blessed.

Watch the Intermittent

Movietone projectionists will do well to watch their projector intermittents closely. Remember that there is a very exact relation between the projector aperture and the sound gate registration. If your intermittents have considerable lost motion—circumferential movement in the sprocket—the result will be the lack of exact synchronization as between the two registrations.

Of course, unless it be very bad indeed, this probably won't amount to very much, in so far as has to do with the screen effect, but just the same, it won't be 100 per cent. perfect, and that's what the true movietone projectionist seeks.

Watch your intermittents therefore, and keep them in the most perfect possible adjustment. Every little fault eliminated helps toward perfection. Is it not so?

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the sound volume necessity no fixed rule can be established. The shape of the auditorium, its cubical content and its seating capacity, all are factors which must be considered in determining the required set size. Broadly the 46 type amplifier is for a small auditorium, the 42 or 9 A for a medium size and the 43 or 10A for a large size. As I have said, however, all that depends in very large measure upon the local conditions.

Actions speak louder than words, they say. But not since movietone was invented.

One kind of prosperity that never makes a fool out of anybody is somebody else's.

Don't make progress like a crawfish. His future is always behind him.

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Horn Control Panel

IN order to realize the best reproduction it is possible to secure from any movietone film, strict attention should be given to the setting of the horn control panel. In general, the best setting of this panel will differ for different types of numbers, news reels and most short numbers requiring a different horn setting from that found desirable for scored pictures.

In your instruction book, under "Rehearsing," will be found Sheet No. 92, paragraphs 4 and 5 and Sheet No. 93, paragraphs 5, 6, 7 and 8 which give as much general information with respect to horn settings as will apply to all theatres and to all types of reproducing equipment.

Under the heading, "Setting-Up," will be found Sheet K-190 upon which the installation engineer, after testing the acoustics of the theatre, should mark the dial positions to be used as the "A," "B," "C" horn settings.

In most theatres the "A" setting is used very seldom with movietone film. The "B" setting is usually recommended for news reels and most short subjects. The "C" setting is usually recommended for scored pictures. Occasionally there may be a short subject consisting mostly of orchestral or band music and the "C" setting may be more suitable in this case. Certain music scenes shown in the news reel can sometimes be improved by a similar change from the "B" to the "C" setting if the change is made quickly. It is very important, however, to return immediately to the "B" setting upon completion of the music shot. If the music shot is of short duration, it is better to use the "B" setting throughout rather than interfere with what may follow by too slow a return to this setting.

When making these changes in horn settings, great care should be observed not to leave the horn dial switches in such a position that the brush makes contact on two studs of the switch simultaneously. If any one of these switches, including that controlling the monitor horn, is left thus short circuiting two contact studs, a short circuit on the output of the power amplifier will take place and poor quality reproduction will result, the magnitude of the effect depending upon which studs are thus short circuited.

In order to be sure that the horns are performing in a satisfactory manner, the projectionist should at least once each day, in the absence of the audience, test each horn separately, making sure to see that it is performing normally and properly.

Watch Sprocket Idlers

Movietone projectionists should be very careful about the adjustment of sprocket idlers. They should be set about two thicknesses of film away from the sprocket, closer than that is likely to cause trouble; further away most certainly will. Also be very sure that both ends of the idlers are equi-distant from the sprocket. Failure in the last will almost certainly make film "climb" in the sprocket.

Projector Optical System

Note: In this series I shall refer you to your Bluebook of Projection, because of the fact that it would consume a prohibitive amount of space to print all the various diagrams and text to be found in the references.

MOVIETONE projectionists of course should and must pay very close attention to the proper care and adjustment of the sound apparatus. That is, of course, obvious, because unless it be properly cared for and adjusted it will not function properly and if it does not function one hundred per cent., then it follows that the results as heard by the audience are not what they should be.

However, it must not for a moment be forgotten that the sound you are projecting is in synchronism with a motion picture, and unless that, too, is placed upon your screen at its highest possible value, the whole thing must inevitably suffer, and your work be discredited just to the extent of the failure.

I therefore have decided to talk with you concerning the projection optical system, faults in which not infrequently cause large and entirely unnecessary light loss. In fact, it is not at all uncommon to find a remedial condition in the projector optical train which is causing as much as a twenty-five per cent. light loss, the condition existing because the projectionist either is unable to secure proper lenses, or lacks the knowledge necessary to efficient selection and adjustment of the various elements of the projector optical train.

It would be an altogether too long story to tell of all the various possible projector optical train

(Continued on last page, Col. 3)

A Matter of Definition

FROM New Brunswick, N. J., comes this letter: "Dear Mr. Richardson: Reading your answers to projectionists in the Bulletin, am hoping you can help me. My trouble is poor focus. Bausch & Lomb projection lenses, half size. Lenses 7½ E. F. When I focus picture some part of it is always 'out.' It may be at bottom, sides or at top. If I set the top and bottom in focus, then the center is out. It is not the film, because I have a special piece of mica for focusing and it does the same thing. Using Peerless lamps and Westinghouse generator equipment. Very hard to get a bright picture on the screen."

If this good brother has set the matter forth correctly, the trouble is either in the projector aperture or in the projection lens; probably the former. Examine the aperture plate closely. If its film tracks are worn perceptibly—not perfectly flat when tested with a steel straight edge—then a new aperture plate and tension shoes should effect a remedy. If these are in good condition, then something is wrong with your lenses, but that seems rather unlikely. Since you apparently can focus both top and bottom of the screen image sharply, the trouble is not due to projection angle. Worn aperture plate and shoes are the seat of the trouble, I think.

As to light, are you sure you have your optical system properly lined? If your generator is producing the right amperage, and you are using sufficient current, (can't even guess what you ought to use, as I have no data as to picture size or character and condition of screen surface), then the trouble lies in your optical system. System out of line or dirty lenses would affect screen illumination; also distance of rear surface of projection lens from film—working distance of projection lens it is called.

I would strongly advise this brother to secure a copy of the Bluebook of Projection and study up on such matters.

Also be it remarked that in my answer I am depending upon the correctness of the data supplied. If the focus could not be made sharp at both bottom and top, but either could be made sharp separately, then the answer would be too much projection lens free diameter for the projection angle. If it could be made sharp all over, except at one point, then probably it is a spot of oil on the projcetion lens surface, a finger mark or, (it has been known), a bit of transparent film adhering to rear surface of lens. If when the center is out at the top, bottom and sides are sharp, and vice versa, then the film does not lie perfectly flat over the aperture, probably for the reason before set forth—that or buckled film, and it certainly is not the latter in this case.

Positions Not Available

The editor is in receipt of many letters asking whether there are not positions for projectionists available in the Western Electric Company installation forces or in movietone. Some of these letters come from projectionists of undoubted high character and ability —men whom I would really be more than pleased to do anything within my power to advance.

However, gentlemen, I am sorry to say that while it is quite true that a few—a very few—projectionists have been found available for the Western Electric engineering force, the chance is so slight that it is hardly worth considering; moreover, such positions are not nearly as desirable as they may seem to you.

Almost the entire field force is selected from men who might qualify with little trouble as radio engineers of high attainment. Even they must pass muster in a class which is put through a course which I can testify would put a few crimps in almost any one's brain.

You can't always judge by appearances. A jackass has long ears but he can't hear any better than anybody else.

Circumstances alter cases. That is all right, of course, except when it is a case of Scotch.

FLICKERS

The world is a pretty good judge of ability. As soon as a fellow gets big enough for people to watch his smoke some cigarette company grabs him for an ad.

They say you can't believe anything you hear. But you can believe what you hear from movietone if it is projected right.

They say you shouldn't trouble till trouble troubles you. But it pays to trouble mechanical trouble before it gets to troubling you.

Not all games will work both ways. You never heard of a man mortgaging his automobile to make a payment on his home.

A lot of fellows think the best way to hold a job is to sit down on it.

A lot of people's judgment ought to be in good shape. They never use it.

(Continued from Page 1, Col. 3)

faults in one issue of the Bulletin. I therefore will take the liberty of continuing our conversation through enough issues to enable us to cover the subject competently.

First of all, it is of large importance that the center of the mirror, if one there be, the condenser, if one there be, the projector aperture opening and both the front and rear end of the projection lens be exactly on the optical axis of the system. And when I say "exactly," that is precisely what is meant. Unless this be the condition you are not working efficiently.

This is especially true if the light source be Mazda. If the center of the Mazda filament be even so little as one-sixteenth of an inch off center—off the optical axis—the loss of light will be very great indeed. The projectionist who works carefully and efficiently will make periodic and not too infrequent tests and know that the entire optical systems of his motion picture projectors are exactly in line.

(Continued in next issue.)

MOVIETONE BULLETIN

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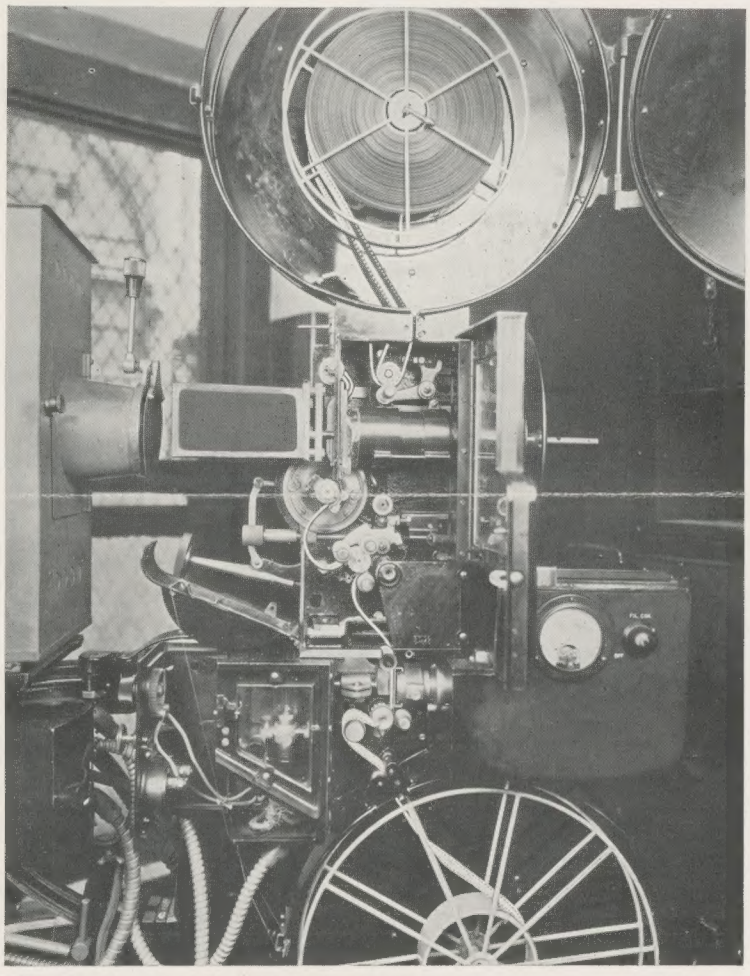
Watch Those Loop Sizes

WHEN threading the projector movietone projectionists must be sure the lower loop—the loop immediately below the intermittent sprocket—and the sound loop — the one immediately above the sound gate — are both of correct size. Failure in this matter will throw the sound out of synchronism with the motion.

The illustration shows them of correct size. To form them correctly, turn the mechanism fly wheel in the direction it normally runs until the intermittent sprocket is just ready to move. In this position the Simplex rotating shutter master blade will be below the light beam and just ready to start cutting through it. You may set the mechanism quickly by noting the position of the shutter, placing a wee bit of white paint on its rim opposite the master blade cutting edge, so that it may be instantly identified.

— Correct Loops Shown in Threaded Projector —



With the mechanism set thus, allow just sufficient slack for the lower loop, (intermittent sprocket loop), so that the finger shoved straight through resting against the edge of the lower guard when it is in position, barely will touch against the lower loop. The lower guard is shown turned down in the illustration.

To form the sound loop correctly, pull the film down through the sound gate tight and then pull it back two sprocket holes. The loop will then be of correct size and the sound and motion will be exactly in synchronization.

In movietone film the sound record is 14½ inches ahead, (on the take-up side), of the film frame it accompanies. With the loops set as directed, the sound record in position for projection will be exactly that distance from the center of the projector aperture, as measured along the film.

Projector Optical System

(Continued from last issue)

LAST week we placed before you the importance of properly lining the various elements of the projector optical train. We set forth the possibilities for light loss through improper selection of condenser lenses and their improper spacing with relation to each other.

Of course, it is granted that the straight arc is rapidly passing out of the picture, and that the old style plano convex condenser will probably soon be found only where high intensity arcs are used. Still it is best that you understand the possibilities for loss of light by improper procedure when they are used, for they still are with us to a considerable extent.

The possibilities for loss where the reflector arc is used are not so great as they are with the plano convex condenser system, but they are considerable, nevertheless.

The mirror of the reflector arc light, regardless of the particular make of the apparatus, is presumed to be exactly of the curvature which will locate the light source the correct distance from it when the proper light concentration is had at the spot. The action of these mirrors may be the better understood by examining figures 315B and 315C, page 833 of Vol. 2 of your Bluebook, and by studying the text matter accompanying them. Also it is recommended that you study "Cleaning Mirrors," pages 831 and 832.

It, of course, will be understood that a mirror surface filmed with dirt, or "fogged" with deposit of any sort, cannot possibly be expected to produce maximum results in light reflection; moreover, such deposit aside from reducing the reflective power of the mirror, has a tendency to diffuse the light, as you may well understand, and diffusion inevitably means loss.

It therefore follows that the mirror surface of reflector lamps must be kept scrupulously clean. Never assume that a mirror surface is perfectly clean merely because it looks clean to the eye. **Clean its surface before each show in a two-a-day house, and twice a day in the continuous.** It really is a small task to do this and wasted light means wasted electric power, as well as a lowering of screen brilliancy.

Use only a soft, perfectly clean cloth, or soft toilet paper for cleaning mirrors and condenser lenses. If the surface be cold and not visibly dirty, just breathe upon it and polish immediately. If a liquid is used, I would recommend denatured or wood alcohol, with a little water added to prevent too-rapid evaporation, as the surface must be wiped and polished while still damp. Caution: Do **not** permit the alcohol to get on the back of the mirror as it may injure the coating. True it may not, but there is always the chance.

Next week we will consider the possibilties for loss at the spot.

(Continued in next issue)

Storage Battery Care

GIVE your storage batteries daily attention. Test them with a hydrometer every day, following the directions in your instruction book, found under "Running Storage Batteries," Instruction Sheet No. 54, Issue April 25, 1928.

It is very important that this daily hydrometer test be made, so don't neglect it. Also, while it may seem a bit superfluous, still I will caution you that you must never test the pilot cell after adding water. After adding water a reading would not be reliable until the battery had either stood for quite a while, or had worked long enough to thoroughly mix the water with the battery fluid.

Of course you know water must be added to storage batteries more frequently in summer than in winter—that is to say unless the batteries be kept in a room having the same temperature summer and winter; also that water must be added more frequently if the battery is used constantly than if it be used for only one show a day. Probably it seems rather foolish to some of you to say that, but maybe it may not be at all foolish to say it to others. You never can tell, and the telling costs little. Incidentally, that last sentence is quite all right if you figure it out right.

Read the instruction sheet before named carefully and fully. Follow its directions religiously—that is unless you are looking for trouble, in which event you probably will find it. Particularly note the direction to never put a battery on charge unless it is down to 1200 and never permit a battery to get lower than 1190. Heed both those instructions or meet the trouble train in a head-end collision.

FLICKERS

Maybe you believe in fate and maybe you don't. Fate is that thing which makes a street car break down the very morning after the boss has threatened to fire you for getting down late.

Achieve fame and people will erect a monument to you. A monument is something they put up in public places for tourists to back up against and get their pictures taken.

These days to save a girl from embarrassment you tell her that what would be her petticoat if she were wearing a petticoat is showing.

If you want to learn, investigate things. The surest way to tell the difference between a toadstool and a mushroom is to eat it.

An old-timer is a fellow who remembers how a woman sounded trying to talk with a mouth full of hairpins.

Watch your step. A lot of fellows don't know they are courting trouble till after they have married it.

Don't be rash. Rashness is the process of trying to do when you have six drinks in you what you said you'd do when you had three.

Man is different from an automobile. He can't get into high places in low gear.

You can always tell who the big gun around an office is. He goes off about two o'clock every day and doesn't come back.

MOVIETONE BULLETIN

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"When Shadows Bawl"

RECENTLY "Liberty," a publication having a very wide circulation, printed the above title over an article in which a writer expressed his opinion concerning sound in synchronization with motion in motion pictures.

My own impression was that the article was not so much meant to criticize excess in sound, as to express disapproval of the use of sound with pictures, except perhaps it be music, which disapproval I have small doubt but that the writer of the article in question will in due time regret.

There is, however, a grain of truth in "When Shadows Bawl," and it is right and proper that that grain be laid before movietone projectionists and theatre managers for examination and consideration. I have myself sat in theatres and because of ill judged excess in volume heard the "shadows" literally "bawl."

Gentlemen, may I direct your undivided attention to the fact that, except excess volume be ordered by the theatre manager, there can be small excuse for the projectionist if there is real, persistent excess of volume in the theatre in which you are in charge of projection?

It is freely granted that perfection in volume requirement cannot possibly be attained in all parts of large auditoriums, especially if the acoustic properties be bad. However, if you are a true movietone projectionist you will use every possible endeavor to secure the best possible balancing of sound, (in which connection see Bulletin No. 34), so that those seated the maximum distance away from the screen may hear at least in reasonable comfort, without setting up a veritable cyclone for those down front.

Just now the regulation of sound volume seems to be one of the most pressing reproduction problems. Before me lies a letter from Mr. Harry Rubin, Supervisor of the great Publix Theatres chain. A part of it reads: "The present tendency of sound pictures is toward too much volume. Many theatre managers, apparently having in mind the considerable cost of the sound equipment, are determined the audiences shall be very much aware of its presence. The projectionist is in many cases literally ordered to raise the fader setting until the resultant volume is much greater than would be tolerated from, for example, an orchestra playing an accompaniment to the picture right there in the theatre, while the speaking figures are made to speak with a voice we might expect to emanate from a giant say twenty feet in height.

It should be remembered that much better general results may be had through and by means of contrast between loud and soft music, than can be obtained by a continuously high level of volume. This contrast should, however, be taken care of completely in the production, rather than in the reproduction. The projectionist seldom is in position to satisfactorily regulate the sound volume for best effect, being partitioned off from the auditorium, often completely. He must therefore, in a room more or less filled with the noise of the machinery in operation, depend almost entirely upon the monitor horn for what he hears.

Naturally this condition places him at the mercy of some one located in the auditorium, and that 'some one' not infrequently has but the most hazy, nebulous idea of capacity limitations of the sound equipment. Moreover it is not at all certain that this person will be able to recognize sound distortions set up by overload, unless they be very bad indeed. As I before said, the projectionist therefore is at the mercy of the 'man down front.'"

There is unquestionable truth in what Supervisor Rubin says, but it seems reasonable to answer by saying the remedy is the careful cueing of each scene of each production in each individual theatre. It would seem quite practical to take care of the high and low in music to which Mr. Rubin refers, in production, but of course the matter of volume in general must be handled in projection, because of the great differences in sound requirements in various theatres.

It seems to me that whoever is in charge of projection should, where possible, leave the projection room in charge of his assistant for short periods while he goes into the auditorium and carefully observes the effect. Surely no theatre manager would object to such a procedure, or regard as anything else than welcome the advice and suggestion of his Chief Projectionist with regard to such matters.

Projector Optical System

(Continued from last issue)

THIS week we will start to examine into the chronometer balance and cylinder escapement of the projection lens, possibly with results beneficial, since if it is, as so often stated, true that the intermittent movement is the "heart" of the projector, then surely the projection lens is the stomach, gizzard, or what have you.

When the picture is in focus on the screen, the rear end of the projection lens will be a certain distance from the film, the distance varying with the make and the focal length of the lens. That distance is known as the "working distance," and it is a very important item indeed, particularly when using a plano convex condenser.

With a plano convex condenser the light beam diverges more or less sharply after passing through the aperture. The amount of divergence will depend upon the distance of the condenser from the aperture. The greater this distance the greater the divergence. This does not hold true with the parabolic condenser.

If the beam diverges sufficiently between the aperture and lens so that it will not all enter the lens, then you will not only have light loss, but also unevenness of screen illumination. This latter is illustrated in figure 47, page 182, Vol. 1 of your Bluebook of Projection.

It therefore is up to you to find out whether or no the beam is all entering the lens, which may be done by removing the projection lens and, having drawn a circle the diameter of the rear factor of your projection lens in the center of a piece of white paper, and covered the entire circle with black ink, (not really necessary, but better), support the paper inside the mechanism at exactly the same distance from the aperture as was the face of the rear factor of the projection lens. Next turn on the light, center the circle in the beam, and if any portion of the beam falls outside the circle, that much light is being wasted and there is uneveness of screen illumination.

Yes, I know it is quite a job to get a paper in exactly the right position. It also is a lot of trouble for a stationary engineer to take a card reading of his engine cylinders, but if he is worth his salt he takes them occasionally just the same.

It was truly said by some ancient: "There is no excellence without great labor." That applies to motion picture projection as well as to the other affairs of life.

Light Struck Screen

"Our manager," writes a Pennsylvania movietone projectionist, "won't listen to reason on one thing and we want your help, brother Richardson, in convincing him of the damage being done.

"The trouble is that the front of the auditorium is pretty brightly lighted and a lot of it reaches the screen. Also the light from a light under the upper boxes on each side strikes the screen badly. The manager won't let anything be done. Says it doesn't do any harm and we are silly to think it does."

There is a lot more, some of it kind words for the Bulletin, too, but those are the essential facts and space in this sheet is at a premium.

I am glad to help in the remedying of so obvious and serious a fault. Here are the facts: When light passes through the photograph of the film located over the projector aperture, it is absorbed or stopped by the photographic emulsion exactly in proportion to the density of the emulsion covering all the thousands upon thousands of pin points on the photograph. The photograph upon the screen is nothing more or less than the variations in light density thus set up.

Light reaching the screen from any source other than the projection lens shines with equal brilliancy upon all portions of the screen photograph which it reaches, hence it shines on both the light portions, which it is too feeble to make appear any more white, and if it be of a yellow tone may actually make appear less brilliant. However, its effect is more pronounced with regard to the darker shades of the photograph. It makes them more or less grey. It lightens them and in so doing **injures their contrast with the lighter portions**, which dulls and "flattens" the picture.

The manager is in error, and in serious error, too. That "stray light" as it is called, is needlessly injuring the beauty of the picture. It should so far as possible be eliminated, which may be accomplished by a judicious shading of the lights. You will find this matter fully dealt with on pages 224-225 Vol. 1, Bluebook of Projection. Suggest you let your manager read this and then show him the above reference. You will there learn how to test for stray light, which is one important function of the projectionist.

FLICKERS

If you think projection worries are too trying and you lead a hard life and there is no relief from the strain, just consider the poor bungalow. It only gets plastered once in a lifetime.

Things are not adjusted just right. The worm will turn, but the dollar never chases anybody.

Bird science is confusing. Many an old bird has taken a chicken out on a lark and ended up on a bat.

A lot of fellows can't stop rocking the boat long enough to paddle their own canoe.

Etiquette books tell us what is bad form, but then so do one-piece bathing suits.

Synthetic gin is a funny thing. It either makes you go blind or makes you see double.

Movietone records everything but the voice of conscience.

The best kind of tired business man to be is a retired business man.